DOCUMENT RESUME

ED 348 960 IR 015 625

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TITLE Technology Transfer and the Job Skills Education Program: Preliminary Results.
PUB DATE 92
NOTE 7p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, April 20-24, 1992).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Adult Basic Education; *Adult Education; Basic Skills; Career Information Systems; *Computer Assisted Instruction; English (Second Language); High School Equivalency Programs; *Technology Transfer
IDENTIFIERS *Job Skills Education Program; National Occupational Information Coordinating Com

ABSTRACT

Technology transfer, for purposes of this paper, refers specifically to the importing of a methodology from one setting to another in order to meet previously unmet needs. The Job Skills Education Program (JSEP), a computer-based functional basic skills curriculum originally developed for the U.S. Army, has been "transferred" to the civilian education community. JSEP is a 300-hour curriculum that provides the basic academic skills students require to benefit from technical training programs. It is offered as an integrated learning system in which prerequisite skills are learned prior to technical training. The crosswalk prepared by the National Occupational Information Coordinating Committee (NOICC) was used to align the basic skills in JSEP with civilian occupational requirements, retrofitting the curriculum to the problem. A civilian pilot test of the program was conducted at the White Plains (New York) Adult and Continuing Education Center in 1989 which focused on the use of JSEP with students in three programs: English as a Second Language, Adult Basic Education, and General Educational Development (GED). Based on student and teacher acceptance during the pilot test and on the results achieved by the target students, 11 demonstration sites were opened in industrial settings, an organization participating in the Job Training Partnership Act, community colleges in several locations, a consortium, and a career development center. An address for more information about JSEP is provided. (ALF)

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Technology transfer and the Job Skills Education Program: Preliminary results

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OVERVIEW

We know that a technology is an applied science or an output of an applied science, but technology transfer can mean different things in different professional and technical settings. Some transfer situations require only the incorporation of a research-based procedure, piece of hardware, or new software into an existing similar program. In that sense, the technology is a new tool for accomplishing traditional work. A second meaning is that of accomplishing a previously unmet need by importing a methodology from another setting. It is the second meaning of technology transfer that is used here. The main issue is: When can transfer be said to be completed?

This report concerns the Job Skills Education Program (JSEP), a computer-based functional basic skills curriculum originally developed for the U. S. Army and subsequently "transferred" to the civilian education community. JSEP is a 300-hour curriculum that provides the basic academic skills students require to benefit from technical training programs. It is offered as an integrated learning system in which prerequisite skills are learned prior to technical training.

The transfer process

To transfer JSEP from the Army setting to the civilian training community, we required an established methodology. To match job requirements to the curriculum, we used the crosswalk prepared by the National Occupational Information Coordinating Committee (NOICC) to align the basic skills in JSEP with civilian occupational requirements. Thus, we employed an approach that has been well established in computer, military, and space hardware systems; we *retrofitted* the curriculum to the problem.

In a job training program, the occupations selected to be trained must bear some relationship to the availability of jobs in those occupations in the marketplace. While basic arithmetic does not change much from year to year, the occupational opportunities to use basic arithmetic do change.

Thus, what is required is a method for identifying the basic skill components of existing occupations, then matching those to the available basic skill lessons in the JSEP curriculum.

Historical development

In previous papers and presentations, my colleagues and I have traced the history of JSEP beginning in 1978 and continuing to the pilot test conducted in 1988-89. Now, I would like to continue the developmental history through the opening and operation of demonstration sites through 1991. By documenting the history of JSEP, I hope to provide both information and incentive to other members of the education community to seek additional opportunities to bring technology developed by military and other government sources to more widespread use.

It has become the public policy of the United States that numerous materials and processes, developed at public expense, be transferred to civilian ownership as a means of improving national economic competitiveness and improving the quality of life. In accordance with specific provisions of the technology transfer act, each department of the government is required to devote a significant effort to transfer government technology to the civilian community.

Technology transfer does not require, however, that all materials and processes be placed exclusively in the public domain. As numerous federal departments have learned over the years, particularly the National Science Foundation and the Departments of Education and Labor, placing materials of potential commercial value in the public domain virtually insures that they will never be effectively exploited. No matter how appealing the thought of declaring these materials in the public domain may be on the surface, history has shown that the materials will simply disappear, or at best, few people will learn about them; fewer still will learn how to access them. The realities of distribution remain. The federal government does not keep complete inventories; neither do those who produced the materials.

To transfer technology effectively means, I believe, to insure that it is available in the future as long as it has economic value. Effective technology transfer is far more likely to occur under the existing market structure where product distribution is best handled by the private sector. Although government agencies may stimulate and participate in the research and development of technologies, in the United States, marketing and distribution are best accomplished privately. When the private sector is the responsible agent, the government is relieved of distribution,

maintenance, and repair obligations.

When we decided to participate in the transfer of JSEP to the civilian environment, we fully intended to make the conversion and then locate a private organization that could bring it to market, service customers, and provide new releases as they were developed.

The JSEP civilian pilot test

The first step in this process was to contract with the U. S. Department of Education to remove the military context and replace it with civilian occupations and examples. This project culminated in a pilot test in White Plains, NY, the results of which were highly encouraging. The installation and implementation went remarkably smoothly for a first-time effort. Thirty-six terminals were installed on two 18-station local area networks. Students were scheduled in the JSEP learning center in two-hour blocks three periods daily. The students at the White Plains Adult and Continuing Education Center pursue a variety of objectives, including English as a second language, GED, and adult basic education. These three groups participated in the pilot test.

Results: Students completed about 40 lessons in 79 hours of on-line instruction, including orientation and start-up time. The 61 students who met the criteria for inclusion in this analysis achieved a 34% gain from pre- to post-test (effect size = .97 SD). Of those, 41 were included in the analysis of Test of Adult Basic Education (TABE) results (ESL students were excluded). Students attained a grade level gain of .94 years in the math section and 1.26 grades in the reading section of the TABE.

Based on student and teacher acceptance during the pilot test, and on the results achieved by the target students, we decided to open demonstration sites that would be representative of the larger target audience throughout the United States. We included industrial settings, those eligible to participate in the Job Training Partnership Act, community colleges in several locations, custodial facilities, secondary schools, vocational schools, and others.

Demonstration sites

New demonstration sites include:

White Plains, NY, June 1988
Meridian, MS, Community College, July 1988
AT&T Phoenix, AZ, September 1990
Cumberland County (NJ) JTPA, November 1990
Ford Motor Company, Cleveland, OH, January 1991
AT&T Dallas, TX , January 1991
AT&T Orlando, FL, February 1991
AT&T Denver, CO, July 1991
Itawamba Community College, Tupelo, MS, Fall 1991
Consortium for Workplace Literacy, New York, NY, Fall 1991
Career Development Center, Jackson, MS, Fall 1991

It is our intention to make JSEP available to all interested users in the United States. To do that, we intend to identify vendors capable of managing and servicing JSEP's distribution to a wide variety of users. Arrangements have been made with the U. S. Army to offer JSEP for distribution. When the distribution agreement has been reached and the first sales of the system are recorded, we will then feel that we have made a complete transfer of the technology from military to civilian use.

Making this transfer happen has been a long and difficult process. It is the hope of all of us who have worked on the program since the beginning that our efforts will lead others to take advantage of the wide range of technologies available for the benefit of the education and training communities.

Other opportunities

There are many other education and training materials and hardware systems developed by the Federal Government that could be made available for technology transfer. Each Federal Agency has an officer charged with transfer responsibility. If you are interested in finding out more about the possibilities, contact the technology transfer officer in that department.

For more information about the Job Skills Education Program, please contact:

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